

PENROSE  **PRESENTS**

MY BEST



MATH PUZZLES

104 Math Puzzle Playing Cards

Ages 12+

7

more of **MY BEST****Toothpick
problem**

Relocate three toothpicks to new locations and end up with three squares the same size. Be sure to use each toothpick as a side of a square.

**MATH PUZZLES**

7



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A Holiday Where?



Is there a Fourth of July in
England?

MATH PUZZLES



7

K



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Getting across the river



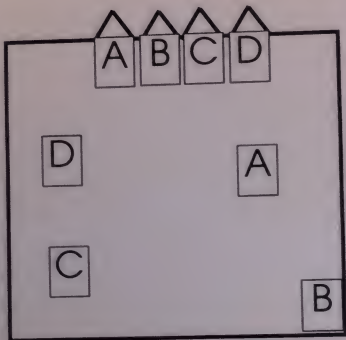
Two girls are rowing their canoe
along the west bank of a stream.
Their parents wave to them and ask
them for a ride to the east bank.
The canoe can hold only one parent
(with no girls) at a time.
How do they all get to the
east side of the stream?

MATH PUZZLES



K

K

more of **MY BEST**

Paths

Draw a path from each house to its garage, so that no paths cross each other or go outside the yard.

MATH PUZZLES

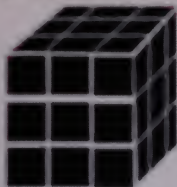
X

K



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The painted cube



This 3 by 3 cube was painted
on all six faces.

How many of its mini cubes
have only 3 painted faces?

How many have no painted faces?



MATH PUZZLES

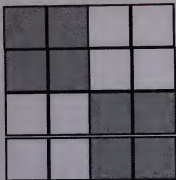


K



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Identical parts



Here's one way to divide this large square into 4 identical parts. Find 3 more ways to divide the square into 4 identical parts (each part must contain 4 mini-squares).



MATH PUZZLES

X

10



MATH PUZZLES

Which number
does not belong
to the group?

16 36

6 25

1 4 9

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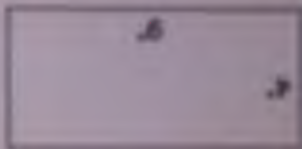
10

10



MY BEST

The dissection
puzzle



Cut the rectangle into two
identical parts which will fit
perfectly to form a square.

MATH PUZZLES



10

10

more of **MY BEST****The dissection
puzzle**

Cut this rectangle into two
identical parts which will fit
perfectly to form a square.

MATH PUZZLES

01

10



more of **MY BEST**

**Find the
missing letters?**

A H I ? O ?

U V W X Y

Discover what these letters
have in common.
What are the missing letters?

MATH PUZZLES



01

10



more of **MY BEST**

What number
is next?

6, 7, 16,

17 . . . ?

MATH PUZZLES



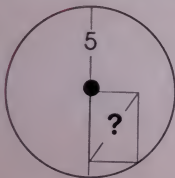
01

J



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The diagonal



How long is the
diagonal?

MATH PUZZLES



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Sam Lloyd's

hidden star puzzle



Find the 5-pointed star hidden in
this figure.

MATH PUZZLES



MORE OF MY BEST

A sticky
problem



Help Fermose find a way to pile
these six sticks so that each stick
touches the other five.

MATH PUZZLES



Q



more of **MY BEST**

Discover the
pattern!

1, **2**, 3,

6, 8, **5**,

?, **?**, 7, . . .

MATH PUZZLES

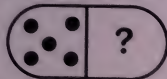
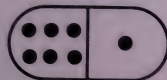
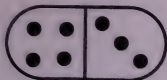


Q

Q

more of **MY BEST**

What comes
next?

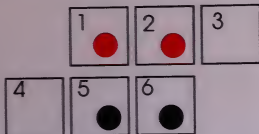
**MATH PUZZLES**

Q



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Musical chips



Penrose wants to find the *easiest* way for the red chips to change places with the black ones.

He can only move one chip at a time either vertically, horizontally or diagonally. Only one chip can occupy a square.



MATH PUZZLES



Q



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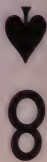


**How many
squares are
in this
figure?**

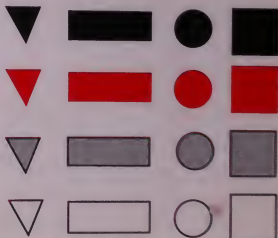
MATH PUZZLES



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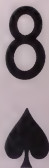


Shapes & colors puzzle



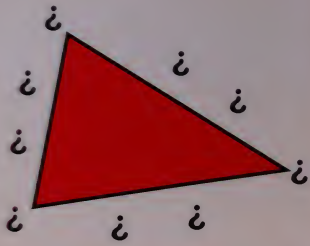
Each shape comes in one of 4 colors. Rearrange them so that each row, column and diagonal of 4 contains 4 different shapes and 4 different colors.

MATH PUZZLES



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A magic triangle



Place the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9 along the three sides of the triangle so that each side totals the same amount.
What amount is this?

MATH PUZZLES

8



8

8

more of **MY BEST**

How did the digits get there?

- Pick any three digits from 0 to 9.
- Add 4 to the first choice, and then multiply this sum by 10.
- Now add the second choice to this product, and multiply this by 10.
- To this add the third digit picked.
- Finally subtract 400.

The final number is made up of the three digits you picked — all in the order picked!

How does this work?



8

MATH PUZZLES

9

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The small change problem



A piggy bank has \$1.05 in coin change. Figure out which coins are in the bank, if you know that the bank:

- cannot change a nickel
 - cannot change a dime
 - cannot change a quarter
 - cannot change a half dollar
 - cannot change a dollar
- and none of the coins is a

MATH PUZZLES

6

9

more of **MY BEST****Monkey
business**

There are only 3 bananas left on this bunch because a monkey ate half the bananas on the bunch, plus half a banana. How many were on the bunch?

MATH PUZZLES

6

9

more of **MY BEST**

What's the
missing letter?

B C D**F G H****? K L . . .****MATH PUZZLES**

6

MY BEST

more of

MATH PUZZLES

The
balancing act



6

6



more of
MY BEST

Is it

**Sunday, Monday,
Tuesday,
Wednesday,
Thursday, Friday
or Saturday?**

The people of Playland only tell
the truth on Sunday, Tuesday and
Thursday. Which day of the week
is it if a Playlander says, "I told
the truth yesterday?"

MATH PUZZLES

8

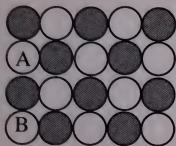


8

J

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Arranging the line-up



By touching only coins A and B
arrange the coins so that all
columns feature same-sided coins.

MATH PUZZLES

3



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The paradox of truth or lie

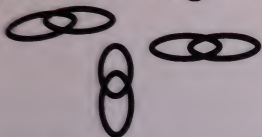
In the town of Baras, anyone who lies is hanged. One day a stranger comes to town. He is asked why he has come. What does the stranger reply so that the town can't decide whether to hang him or let him go free?

MATH PUZZLES



3

3

more of **MY BEST****The missing link**

Janet wants to join the three parts above into a bracelet. The jeweler says he has to charge \$2 for each link he has to cut and resolder. He figures it will cost \$6. She figures out a way it will cost only \$4. How does Janet solve the problem?

MATH PUZZLES

3

3

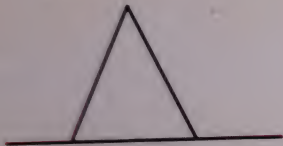
more of **MY BEST****Triangle
problem**

Figure out a way to add two
straight lines so that 10
triangles will be formed.

MATH PUZZLES

3 of MY BEST

Which coins?



Jeff has two U.S. coins in his hand which total 26 cents. One is not a penny. What are they?

MATH PUZZLES

3 of

more of
MY BEST

Which coins?



Jeff has two U.S. coins in his hand which total 26 cents. One is not a penny. What are they?

MATH PUZZLES

3



3

2

more of **MY BEST**

Sand Piles



Paul's little brother and sister are playing in a sand box. His brother makes 3 piles, while his sister makes 5 piles. If they put their sand piles together, how many sand piles will there be?

MATH PUZZLES

7

2

more of **MY BEST**

A Paradox

In a particular village in the Alps, the barber shaves all those in the village who do not shave themselves.

Who shaves the barber?

MATH PUZZLES

2

2

more of **MY BEST****Lewis Carroll's
window puzzle**

*Draw a new window of the
same height and width that lets
in only half the light?*

**MATH PUZZLES**

2

2

more of **MY BEST**

**What do you
get?**

$$\left(67.5 \div \frac{3}{4}\right) \times \frac{1}{3}$$

$$2 \times (7.5 \div .5)$$

MATH PUZZLES

2

Six coin puzzle



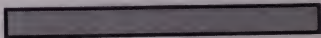
Six identical looking coins are on the table. 3 of the coins each weigh 8 grams, while the other 3 each weigh 7.9 grams. How can you identify two of the light coins in just two weighings using a balance scale?



more of
MY BEST

The measuring sticks

 3"

 8"

I have two sticks. One is 8" long
and the other is 3" long. Using
these two sticks, figure out a way
to measure 1".

MATH PUZZLES

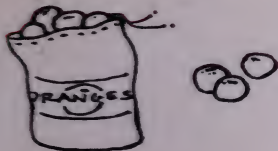
5



5



5

more of **MY BEST****How many?**

I took 3 oranges from a bag
of 30 oranges. Now how
many oranges do I have?

MATH PUZZLES

5

5

more of **MY BEST****The snail problem**

This snail is climbing up a slippery 30-inch wall. Each minute it climbs 5 inches, but slides back 4 inches. How many minutes will it take the snail to reach the top of the wall?

MATH PUZZLES

5

4



more of **MY BEST**

**What number
am I?**



When a number is divided
by me, the result is triple
the number!

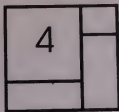
MATH PUZZLES



4

more of **MY BEST**

**How were the
squares put down?**



Penrose layered four identical squares on top of each other as shown. If the square numbered 4 was the last to be placed, how and in what order were the other three placed?

MATH PUZZLES

more of MY BEST

Lewis Carroll's
couplet game

EYE to LID

Change the first word to the
second by changing one letter at a
time in the first word so that each
new set of letters forms a word. For
example CAT can change to COT,
then to DOT, and finally to DOG.
So CAT became DOG.

MATH PUZZLES

4



4

more of
MY BEST

**Lewis Carroll's
couplet game**

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MATH PUZZLES

4



4

4

more of **MY BEST**

The trickster



Tom secretly put two black marbles in a bag, but told Ann it contained one black and one white. Tom bet Ann \$5 to \$1 that she would not pick the white marble on her first draw.

Ann accepted the bet.
What did Ann say to Tom
in order to win the game?

**MATH PUZZLES**

6

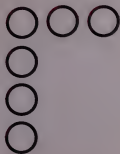
more of **MY BEST****What's the
maximum length?** $1/2'$ $1'$ $1/4'$ $1/8'$ $1/16'$:
:
:

Take $1/2'$ and add $1/4'$ to it, then
add $1/8'$ to this. Continue adding
one-half the previous length. The
length will never be longer than
how many feet?

MATH PUZZLES

9

6

more of **MY BEST****4 in a row**

Move one penny to a new location and end up with two lines with four pennies each.

MATH PUZZLES

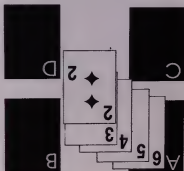
9

6 ♠

MY BEST more of

The Brahma card

puzzle



Find a way to relocate the stack of
5 cards from A to D following

these rules:

- Move one card at a time to any of the 4 stacks.
- A larger-valued card cannot be placed on top of a smaller-valued card.

MATH PUZZLES

9



9



MATH PUZZLES

Would it be less expensive for
you to take a friend to the
movies three times, or three
friends one time?

**SNEAK
PREVIEW**

more of
MY BEST



9

A



more of **MY BEST**

**What's the
problem?**

$$\begin{array}{r} \text{OK} \\ + \text{OK} \\ \hline \text{K4} \end{array}$$

O and K are digits. K is
greater than 3.
What digits are O and K?



MATH PUZZLES

A

A



more of **MY BEST**



**What number
am I?**

*Add a million of me and
this sum is the same as
adding just two of me.*

MATH PUZZLES

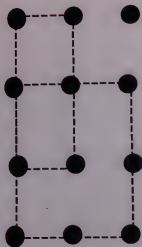


A



more of **MY BEST**

Making rectangles



Using any 4 of these 12 dots for the vertices of a rectangle, what is the greatest number of rectangles that can be made?

MATH PUZZLES

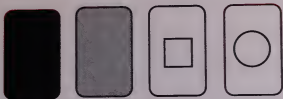


A



more of **MY BEST**

**Which
is which?**



Each of the four cards is either black or gray on one side and has either a square or a circle on the other side.

What must you turn over to decide if every black card also has a square on its opposite side?

MATH PUZZLES



V

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MY BEST

Penrose's hat problem

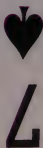
A box had 1 black hat and 2 tan hats. Penrose blindfolded his two cat friends. After placing hats on their heads, Penrose removed the blindfolds, and asked—"Do you know the color of the hat on your head?" Each cat could see the other's hat. They looked puzzled. Finally, Morris said he didn't know. At which point Watson said he knew. How did he know?

MATH PUZZLES

7



more of MY BEST



Inheritance problem



A merchant left his 3 sons 17 camels. The eldest was to get $1/2$ of the camels. The middle son was to get $1/3$ of the camels, and the youngest was to get $1/9$. How were the camels divided so that none had to be slaughtered?

MATH PUZZLES



A



MY BEST

The cat problem



At the Cats Galore Cat Show, $\frac{1}{2}$ of the cats were Siamese, $\frac{1}{4}$ were Persian, $\frac{1}{5}$ were Abyss, and 1 cat was a Tabby. How many cats were in the show?

MATH PUZZLES



W



In 1985, Penrose the cat adopted his mistress, Theoni Pappas. At the time he had no idea what was in store for him. When he learned she was a mathematician, he was certain his life would be very quiet and a little boring. But he soon learned otherwise. Stretching out on his mistress' desk, amid papers filled with figures and equations, Penrose discovered a fascinating world of mind-boggling puzzles and number games. Sure there were math problems, but not just plain old addition and subtraction. These problems required some fancy thinking, and that's what made them fun. This box contains some of the puzzles that make Penrose purr. Now it's your turn. Enjoy!!

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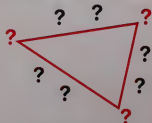
MATH PUZZLES

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St. Paul, MN. 55112

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MY BEST

A magictriangle?



Place the numbers
1, 2, 3, 4, 5, 6, 7, 8, 9
along the three sides of
the triangle so that each side
totals the same amount.
What amount is this?

104 Puzzle Playing Cards plus Instructions!

MY BEST

Lewis Carroll's couplet game

EYE to LID

Change the first word to the
second by changing one letter at a
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MATH PUZZLES